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EXAMINER

JONES, JUDSON

ART UNIT PAPER NUMBER

2834

DATE MAILED: 01/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/696,392

Applicant(s)

MORO ET AL.

Examiner

Judson H Jones

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28,30-61 and 63-76 is/are pending in the application.
- 4a) Of the above claim(s) 31-43 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 44-48 is/are allowed.
- 6) ☒ Claim(s) 1-3,6-8,13,16-26,30 and 49-59 is/are rejected.
- 7) ☒ Claim(s) 4,5,9-12,14,15,27,28,60 and 61 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 2834

DETAILED ACTION

The indicated allowability of claims 13, 21-26, 30, and 49-61 is withdrawn in view of the newly discovered reference(s) to Hathaway. Rejections based on the newly cited reference(s) follow. Also while the Grodinsky et al. reference was cited in the office action of 5/22/2002, the significance of figures 2 and 3 had not been appreciated. The indicated allowability of claims 1-12 and 14 is also withdrawn.

Claim Objections

Claims 19 and 20 are objected to because of the following informalities: These claims refer to an "increased" saturation area, which indicates a comparison between two areas.

However there is no indication of what the increased saturation area is being compared to.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 16 is rejected under 35 U.S.C. 101 because the disclosed invention is inoperative and therefore lacks utility. Aluminum does not conduct magnetic flux and therefore an aluminum flux return assembly would be inoperative.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Art Unit: 2834

Claim 16 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a flux return made of steel or iron (see page 7 lines 16-19 of the specification), does not reasonably provide enablement for a flux return of aluminum. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over PCT/WO 99/48329 (cited by Applicant) in view of Grodinsky et al. The PCT '329 reference discloses in figure 2 an electromagnetic drive motor comprising a flux return assembly including a pole piece 12 having upper and lower ends, a flux stabilization ring 16B around the pole piece, a top plate S, a bottom plate N, a magnet between the plates, a top magnetic gap between the flux

Art Unit: 2834

return assembly and the top plate and a bottom magnetic gap between the flux return assembly and the bottom plate but does not disclose the flux return assembly divided into an upper pole piece and a lower pole piece. However Grodinsky et al. teaches in column 3 lines 39-60 that dividing a flux return piece into two sections reduces eddy current distortions. Since the PCT '329 reference and Grodinsky et al. are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a flux return assembly divided into upper and lower pieces in order to reduce eddy current distortions and thus improve sound quality when the electromagnetic drive motor is used for a loudspeaker.

In regard to claims 2 and 3, see the PCT '329 reference page 6 lines 4-16.

In regard to claims 6 and 7, see PCT reference '329 page 5 lines 9-20 and see Hathaway column 5 lines 22-34.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over PCT reference '329 as modified by Grodinsky et al. as applied to claim 6 above, and further in view of Rollins. PCT reference '329 as modified by Grodinsky et al. discloses the electromagnetic drive motor with the dual coils but does not disclose coupling the coils to each other externally from the cylinder. However Rollins discloses a dual coil motor and teaches making external connections to the second coil in column 2 lines 30 ½ to 40 ½. Since Rollins and PCT reference '329 are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized external connections to dual coils in order to allow adding external circuit elements to the dual coil for damping resonant distortions and thus improving the fidelity of the speaker.

Art Unit: 2834

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over PCT reference '329 as modified by Grodinsky et al. as applied to claim 2 above, and further in view of Hathaway. PCT reference '329 discloses the electromagnetic drive motor but does not disclose upper and lower pole pieces having tip portions. However Hathaway teaches in column 4 lines 3-14 that saturation at the magnetic gap increases motor efficiency and also teaches removing material from the tip of the pole. Since Hathaway and PCT reference '329 as modified by Grodinsky et al. are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized pole tips in a electromagnetic drive motor in order to saturate the pole tips and thereby increase motor efficiency.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over PCT reference '329 as modified by Grodinsky et al. as applied to claim 2 above, and further in view of Button 5,748,760 (of record). PCT reference '329 as modified by Grodinsky et al. discloses the electromagnetic drive motor but does not disclose the motor enclosed in a housing. However enclosing motors in housings is well known in the art in order to protect the motors from damage. Button discloses a housing 25 for a motor in figure 1. Since Button and PCT reference '329 as modified by Grodinsky et al. are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a housing for the electromagnetic drive motor in order to protect the motor from damage.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over PCT reference '329 as modified by Grodinsky et al. as applied to claim 2 above, and further in view of Lace 5,422,432. PCT reference '329 as modified by Grodinsky et al. discloses the electromagnetic

Art Unit: 2834

drive motor but does not disclose the magnet being an assembly of three magnets. However Lace discloses in column 4 lines 30-41 making a magnet from three layers of magnetic material because the preferred magnetic material is commercially available only in thin sheets. Since Lace and PCT reference '329 as modified by Grodinsky et al. are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized three layers of magnetic material to make a magnet in order to use a magnetic material available only in thin sheets.

Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the PCT '329 reference in view of Grodinsky et al. as applied to claim 1 above, and further in view of O'Neill 4,580,015. PCT '329 as modified by Grodinsky et al. discloses the electromagnetic drive motor but does not disclose the top plate having an increased saturation area juxtaposed to the top magnetic gap with a field strength of between 10,000 to 22,000 Gauss. However O'Neill discloses a flux density of 14,500 Gauss in the gap. Because the flux in the gap is flowing through the plates adjacent to the magnet, the plates also have a flux density of 14,500 Gauss. Since O'Neill and the PCT reference '329 as modified by Grodinsky et al. are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a top plate having a field strength of about 14,500 Gauss in order to increase the strength of the magnetic attraction between the core and the moveable member so as to increase the speed and productivity of the machine.

Claims 21-23, 49-51, 58 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hathaway 4,295,011 in view of PCT reference '329. Hathaway discloses a single coil single gap electromagnetic drive motor with a flux return 32 where the plate 16 near

Art Unit: 2834

the air gap is saturated as described in column 3 lines 11-15 but does not disclose top and bottom plates near top and bottom air gaps. However PCT reference '329 teaches on page 1 lines 18-28 that dual coil voice coil motors are more efficient than single coil motors. Since PCT reference '329 and Hathaway are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a dual coil, dual gap arrangement in the device of Hathaway in order to increase the efficiency. The pole tip portion is viewed as being the tapered end portion of element 16 as shown in figure 3 of Hathaway.

In regard to claims 22, 23, 51 and 59, see PCT reference '329 page 6 lines 4-16.

In regard to claims 50 and 58, see Hathaway elements 62 and 64 of figure 3 and column 6 lines 29-38.

Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hathaway as modified by PCT reference '329 as applied to claim 49 above, and further in view of Morcos et al. Hathaway as modified by the PCT reference '329 discloses the electromagnetic drive motor but does not disclose using finite element analysis to design the magnetic circuit. However Morcos et al. teaches using finite element analysis for speaker systems on the front page of the patent where an article "A Primer on Magnetic Circuit Design: Materials, Permeance, Calculations and Finite Element Analysis" by A. C. Marcos is cited as a reference. Since Morcos et al. and Hathaway as modified by PCT reference '329 are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized finite element analysis in the design of an electromagnetic drive motor in order to increase the efficiency of the motor.

Art Unit: 2834

Claims 24-26 and 53-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hathaway as modified by PCT reference '329 as applied to claim 49 above, and further in view of O'Neill. Hathaway as modified by PCT reference '319 discloses the dual coil dual gap electromagnetic drive motor with the saturated plates but does not disclose the level of the field strength. However O'Neill discloses a flux density of 14,500 Gauss in the gap. Because the flux in the gap is flowing through the plates adjacent to the magnet, the plates also have a flux density of 14,500 Gauss. Since O'Neill and Hathaway as modified by the PCT reference '329 are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a top plate having a field strength of about 14,500 Gauss in order to increase the strength of the magnetic attraction between the core and the moveable member so as to increase the speed and productivity of the machine.

In regard to claims 56 and 57, see Hathaway elements 62 and 64 of figure 3 and column 6 lines 29-38.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hathaway as modified by PCT reference '329 as applied to claim 21 above, and further in view of Yamamoto et al. Hathaway as modified by PCT reference '329 discloses the electromagnetic drive motor but does not disclose a hole in the centerline of the motor. However Yamamoto et al. teaches in column 5 lines 43-67 that a hole in the centerline of a loudspeaker device can cool the motor. Since Yamamoto et al. and Hathaway as modified by PCT reference '329 are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a hole in the centerline of an electromagnetic drive motor in order to cool the motor and thus make it more efficient.

Art Unit: 2834

Allowable Subject Matter

Claims 44-48 are allowed.

Claims 4, 5, 9-12, 14, 15, 27, 28, 60 and 61 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not disclose or teach the configuration of upper and lower pole pieces as recited in claim 4. The prior art of record does not disclose or teach a top plate tip facing toward a bottom plate and a bottom plate tip facing toward the top plate as recited in claims 9, 27 and 60. The prior art of record does not disclose or teach a top plate tip facing away from a bottom plate and a bottom plate tip facing away from the top plate as recited in claims 10 and 27. The prior art of record does not disclose or teach a top plate tip facing toward and away from a bottom plate and a bottom plate tip facing toward and away from the top plate as recited in claim 11. The prior art of record does not disclose or teach an electromagnetic drive motor having symmetrical upper and lower pole pieces as recited in claim 14. The prior art of record does not disclose or teach an electromagnetic drive motor having an intermediate gap between top and bottom magnetic gaps with the intermediate gap between an outer flux stabilization ring and a flux stabilization ring as recited in claim 15. The prior art of record does not disclose or teach a method of forming a flux return with upper and lower pole pieces and a flux stabilization ring smaller in inner diameter than the diameter of the outer wall of the pole pieces as recited in claim 44.


Art Unit: 2834

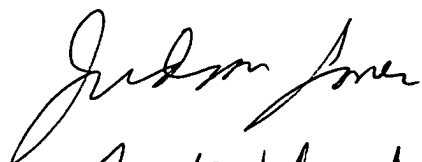
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nagel 4,220,832 discloses a flux return assembly located between top and bottom plates 24, 26 in the axial direction but discloses no advantages or motivations for that arrangement. Nagel does not disclose top and bottom magnetic gaps or a flux stabilization ring. No motivation has been found for combining the flux return assembly of Nagel with an electromagnetic drive motor having upper and lower pole plates, a flux stabilization ring, a magnet and top and bottom magnetic gaps to create the instant invention. Zwicky teaches adjusting the saturation of the flux return for a speaker system in order to improve the fidelity of the sound reproduction.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Judson H Jones whose telephone number is 703-308-0115. The examiner can normally be reached on 8-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 703-308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JHJ 
January 24, 2003


Art Unit 2834